

ATTACHMENT A
FACILITY DESCRIPTION

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LIST OF ABBREVIATIONS/ACRONYMS

20.4.1 NMAC	New Mexico Administrative Code, Title 20, Chapter 4, Part 1
cm	centimeters
cm/hr	centimeters per hour
CSU	container storage unit
DOE	U.S. Department of Energy
ft	feet/foot
in.	inch(es)
km	kilometer
LANL	Los Alamos National Laboratory
RCRA	Resource Conservation and Recovery Act
TA	Technical Area
WCRRF	Waste Characterization, Reduction, and Repackaging Facility (TA-50-69)

ATTACHMENT A

FACILITY DESCRIPTION

The information provided in this section is submitted in accordance with the applicable requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20.4.1 NMAC), revised June 14, 2000 [6-14-00]. The following subject areas are addressed:

- A general description of Technical Area (TA) 50 at Los Alamos National Laboratory (LANL) (20.4.1 NMAC, Subpart IX, 270.14(b)(1) [6-14-00])
- Site-specific traffic patterns, volume, and control (20.4.1 NMAC, Subpart IX, 270.14(b)(10) [6-14-00])
- Site-specific location information for compliance with seismic and floodplain standard requirements (20.4.1 NMAC, Subpart IX, 270.14(b)(11), and 20.4.1 NMAC, Subpart V, 264.18(a) and (b) [6-14-00])
- Site-specific topographic map requirements (20.4.1 NMAC, Subpart IX, 270.14(b)(19) [6-14-00])
- Site-specific groundwater monitoring and protection information (20.4.1 NMAC, Subpart IX, 270.14(c) and 20.4.1 NMAC, Subpart V, 264.90(a) [6-14-00])

A LANL-wide facility description addressing additional regulatory requirements is provided in Appendix A of the "Los Alamos National Laboratory General Part B Permit Application," (LANL 1998a), hereinafter referred to as the LANL General Part B.

A.1 TA-50 GENERAL DESCRIPTION [20.4.1 NMAC, Subpart IX, 270.14(b)(1)]

TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south. Mesa-top elevations at TA-50 range from approximately 7,250 to 7,280 feet (ft) above mean sea level. Figure A-1 depicts the TA-50 location within the LANL site boundary, and its location relative to other TAs. Figure A-2 depicts facilities, structures, and hazardous and mixed waste units within the TA-50 boundary. Nearby facilities are described in Section A.1.4 of this attachment. The nearest point of unrestricted public access to TA-50 outside the LANL site boundary is the Royal Crest Trailer Park 1,500 meters (3,770 ft) north of TA-50. The residential areas of Los Alamos and White Rock are within a 17-kilometer (km) (10-mile) radius of TA-50 and together have a population of approximately 18,200.

The waste management units addressed in this permit renewal application include two container storage units located at TA-50-69. Other waste management units have been identified in previous

Part A or Part B permit applications. These hazardous and/or mixed waste management units are identified in Table A-1.

Table A-1
Waste Management Unit Status at Technical Area 50

Waste Management Unit	Unit Type	Current Status
TA-50-1, Room 59	CSU	To Be Closed ^a
TA-50-37, Rooms 115, 117 and 118	CSU	To Be Closed ^a
TA-50-69, Indoor Area	CSU	Requesting Permit Renewal ^b
TA-50-69, Outdoor Area	CSU	Requesting Permit Renewal ^b
TA-50-114	CSU	To Be Closed ^a
TA-50-1, Rooms 35, 36, and 38/38A	CSU	Administratively Removed ^c
Solidification/Cementation Unit	Treatment	Administratively Removed ^c
Controlled Air Incinerator	Treatment	Closed ^d
Batch Waste Treatment Unit	Treatment	Closed ^e
TA-50-137	CSU	Administratively Removed ^c
TA-50-138	CSU	Administratively Removed ^c
TA-50-139/Storage Pads	CSU	Administratively Removed ^c
TA-50-140/Storage Pads	CSU	Administratively Removed ^c

- ^a To be closed in accordance with New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart VI [6-14-00], requirements.
- ^b Detailed descriptions provided in Attachment G of this permit renewal application.
- ^c Waste management units that were proposed but never constructed and/or where waste was never stored, treated, or disposed.
- ^d "Los Alamos National Laboratory controlled-Air Incinerator RCRA Closure Certification Report," Benchmark Environmental Corporation, Albuquerque, New Mexico, 1998.
- ^e "Closure Certification Report TA-50 Batch Waste Treatment Unit," IT Corporation, Albuquerque, New Mexico, 1994.

CSU = container storage unit

Waste management units addresses in this permit renewal application include two container storage units (CSU) located in the southwest quadrant of TA-50 and identified as the TA-50-69, Indoor CSU and the TA-50-69, Outdoor CSU. Detailed descriptions of these CSUs are provided in Attachment G of this permit renewal application.

A.1.1 Meteorology and Hydrology

The climate and surface winds are described in the LANL General Part B.

A.1.2 Wells and Surface Waters [20.4.1 NMAC, Subpart IX, 270.14(b)(19)(iii) and (ix)]

The only hydrological characteristic specific to operations conducted at TA-50 is surface runoff in the small drainage off the mesa for brief periods during spring snowmelt and intense summer thunderstorms. Surface grading and other storm water controls prevent accumulation of storm water

and snowmelt (Appendix A, LANL General Part B). Summer storms on the Pajarito Plateau can generate high discharge rates and may reach a maximum discharge in less than two hours. High discharge rates can transport suspended and bed sediments down the canyons. Snow, however, melts slowly in the spring and runs off over a period of several weeks to several months at a low discharge rate. Stream flow is ephemeral in Cañada del Buey to the north and Pajarito Canyon to the south of Mesita del Buey, occurring primarily during snowmelt or thunderstorms. Situated on top of the mesa, TA-50 is not affected by stream flooding or runoff.

A.1.3 Surrounding Land Use [20.4.1 NMAC, Subpart IX, 270.14(b)(19)(iv)]

No industrial facilities, except for those within LANL, are near TA-50. The following buildings or facilities are located within the TA-50 boundary:

- Radioactive Liquid Waste Treatment Facility, TA-50-1
- TA-50-37
- Engineering Sciences and Applications Division, TA-50-54
- WCRRF, TA-50-69
- Portable office trailer, TA-50-84
- Portable office trailer, TA-50-196
- U.S. West relay facility, TA-50-184
- Material Disposal Area-C Landfill (inactive)

As depicted on Figure A-1, the TAs that border TA-50 include: TA-35, TA-40, TA-55, TA-63, and TA-66. TA-35, located northeast of TA-50, includes facilities that conduct nuclear safeguards research and development. TA-40, which is south and west of TA-50, is used in developing special detonators for the initiation of high-explosive systems. The facilities at TA-55, west of TA-50, conduct plutonium processing and metallurgy research. TA-66, southeast of TA-50, includes the Advanced Technology Assessment Center. The types of activities conducted, the separation distances, and administrative controls ensure that these nearby TAs do not affect the safety of operations conducted at TA-50.

A.2 TRAFFIC PATTERNS [20.4.1 NMAC, Subpart IX, 270.14(b)(10)]

General traffic pattern information, traffic volume, and traffic control signals for the LANL-wide facility are provided in Appendix A of the LANL General Part B (LANL, 1998a).

A.2.1 Routes of Travel

The primary traffic routes that may be used to transport hazardous and mixed waste to and from TA-50 include Pajarito Road, Pecos Drive, and Mesita del Buey Road as shown on Figure A-3. Lesser-used traffic routes include Diamond Drive and West Jemez Road (State Road 501). Containers received at TA-50, are also moved minimal distances on road surfaces within the TA.

A.2.2 Traffic Volumes and Control

The only local access road to TA-50 is Pajarito Road. Approximately 8,000 automobiles traverse Pajarito Road daily as stated in "Environmental Surveillance at Los Alamos During 1990" (LANL, 1992). The U.S. Department of Energy controls all of the area within the Laboratory site boundary and has the authority to completely restrict access. LANL routinely closes Pajarito Road for activities such as the transport of hazardous waste to and from TA-50.

During normal business hours, the traffic pattern consists of personal and government-owned passenger vehicles entering the area through the open western gate, going to a parking area, and parking. After normal business hours, access through this western gate is by badge-reader only. Throughout normal business hours, the eastern gate may remain open to receive deliveries. After normal business hours, this eastern gate is padlocked. Throughout the workday, the average flow of traffic is approximately 160 vehicles per day. Authorized government vehicles only are permitted on the road leading around the southern end of TA-50-1 and in the area to the southeast of TA-50-1. Figure A-4 depicts the gates and area discussed.

A.2.3 Traffic Control Signals

Traffic control signals within TA-50 include stop signs, posted speed limits, and other traffic and pedestrian control signs. The locations of existing signs at TA-50 are shown on Figure A-4

A.3 LOCATION INFORMATION [20.4.1 NMAC, Subpart IX, 270.14(b)(11)]

A.3.1 Geology

Geologic aspects (Longmire et. al., 1996) of interest at TA-50 include the following:

- Detailed stratigraphy of the upper units of the Bandelier Tuff, including contacts between units that may form barriers to migration or create paths to divert liquid or vapor movement.
- Joints in the Bandelier Tuff that may provide paths for liquid and vapor movement.
- Mineralogy of the geologic strata that may be important in the retardation of contaminant movement.
- Faulting that may provide zones of fracturing along which contaminant transport may be enhanced.
- Surface erosion that could potentially transport contaminants.

A.3.1.1 Seismology [20.4.1 NMAC, Subpart IX, 270.14(b)(11)(i) and (ii), and 20.4.1 NMAC, Subpart V, 264.18(a)]

TA-50 is located in Los Alamos, New Mexico; therefore, pursuant to 20.4.1 NMAC, Subpart IX, 270.14(b)(11)(i) [6-14-00], the seismic standard of 20.4.1 NMAC, Subpart V, 264.18(a) [6-14-00], is applicable.

A geologic field investigation, which consisted of exploratory trenching, was conducted within 3,000 ft of TA-50 during the fall of 1992 and summer of 1993. Based on trench stratigraphy, no evidence of Holocene faulting was observed (Woodward-Clyde Federal Services, 1995). Therefore, TA-50 is in compliance with the seismic standards of 20.4.1 NMAC, Subpart IX, 270.14(b)(11)(i) and (ii), and 20.4.1 NMAC, Subpart V, 264.18(a) [6-14-00]. Figure A-5 details regional surface faulting.

A.3.1.2 Stratigraphy

TA-50 is located in the central part of the Pajarito Plateau. A simplified stratigraphy of the TA-50 site, as well as estimated thickness of rock units, is shown on Figure A-6.

A.3.1.3 Soils

The soils on Mesita del Buey were derived from Bandelier Tuff bedrock and formed under a semiarid climate. Soils on the mesa top are mainly thin, well-drained, sandy loams. The subsoil is a reddish-brown clay, gravelly clay, or clay loam with depth to tuff bedrock about 20 to 50 centimeters (cm) (8 to 20 inches [in.]). These soils are classified in the Unified Soil Classification System as sandy loam, sandy loam-sandy clay, loam, clay loam-loam, and clay loam.

TA-50 is a Hackroy-Rock outcrop complex and Carjo loam. The Hackroy-Rock outcrop complex consists primarily of rock outcrop and Hackroy soils. The Hackroy soils typically range from a brown, sandy loam in the top 8 cm to a reddish-brown clay from 8 to 30 cm in depth. Permeability rates range from 5 to 15 centimeters per hour (cm/hr) in the top layers down to 0.15 to 0.50 cm/hr in the lower layers. The shrink-swell potential is low. Available water-holding capacity is 0.11 to 0.21 cm per cm (cm/cm), and the soil pH is 6.6 to 7.8. The Carjo soils typically range from a grayish-brown loam in the top 10 cm to a brown clay loam from 10 to 30 cm in depth. Permeability rates range from 1.5 to 5 cm/hr in the top layer, down to 0.15 to 5 cm/hr in the lower layers. The shrink-swell potential is low to moderate. Available water-holding capacity is 0.14 to 0.21 cm/cm, and the soil pH is 6.3 to 7.8 (Nyhan et al., 1978).

The slopes between TA-50 mesa top and canyon bottoms consists of steep rock outcrops and patches of shallow, undeveloped colluvial soils. The south-facing canyon walls of Pajarito Canyon are steep and have little or no soil material or vegetation, whereas the north-facing walls of Canada del Buey have areas of thin dark-colored soils. Native vegetation at TA-50 is mainly brome grass, false tarragon, blue grama, wormwood, Colorado piñon, and one-seed juniper.

A.3.1.4 Erosional Processes

Erosion of material on Mesita del Buey occurs primarily by shallow runoff on the relatively flat pans of the mesa, by deeper runoff in channels, and by rock fall and colluvial transport on the canyon walls. Wind erosion of disturbed soils also occurs. Mesita del Buey cliff-forming units are eroded primarily by lateral cliff retreat and not vertical erosion.

A.3.2 Floodplain Standard [20.4.1 NMAC, Subpart IX, 270.14(b)(11)(iii), 270.14(b)(19)(ii), and 20.4.1 NMAC, Subpart V, 264.18(b)]

The CSUs addressed in the TA-50 Part B are not located within the 100-year floodplain boundary. In accordance with 20.4.1 NMAC, Subpart IX, 270.14(b)(11)(iii) [6-14-00], additional floodplain information is provided in Appendix A of the LANL General Part B.

A.4 TOPOGRAPHIC MAPS [20.4.1 NMAC, Subpart IX, 270.14(b)(19)]

Topographic maps and figures are provided herein or referenced to meet the requirements of 20.4.1 NMAC, Subpart IX, and 270.14(b) (19) [6-14-00]. All maps clearly show the map scale, the date of preparation, and a north arrow. The maps and figures used to fulfill these regulatory requirements include the following:

- LANL-wide 100-year floodplain maps are provided as Appendix C of the “Response to Request for Supplemental Information: Technical Adequacy Review, Resource Conservation and RCRA Permit Application; General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0; Los Alamos National Laboratory, EPA ID No. NM 0890010515,” (LANL, 2001).
- A map showing surface waters, including intermittent streams, near TA-50 is included as Figure A-7.
- Surrounding land uses are shown on Figure A-1.
- Wind roses for TA-6, the TA directly to the west of TA-50, are shown on Figures A-8 and A-9.
- A map showing the legal boundaries of LANL (including TA-50) is provided as Map 1 in the “Los Alamos National Laboratory General Part A Permit Application,” Revision 0.0 (LANL, 1998b), hereinafter referred to as the LANL General Part A.
- Access control features at TA-50 (e.g., fences, gates) are shown on Figure A-10.

- A map showing supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near TA-50 is included as Figure A-7.
- The locations of buildings, hazardous and/or mixed waste management units, and loading and unloading areas at TA-50 are shown on Figure A-7.
- A map showing National Pollutant Discharge Elimination System discharge structure locations is included in the LANL General Part A (LANL, 1998b).
- Storm, sanitary, and process sewer systems at LANL are shown on Map A-1 of the LANL General Part B (LANL, 1998a).
- Drainage control features (e.g., run-on/runoff) are shown on Figure A-11.
- Natural surface drainages are shown on a topographic map included herein as Figure A-7.
- Fire stations serving LANL and the County of Los Alamos are shown on Figure E-2 of Appendix E in the LANL General Part B (LANL, 1998a).
- The equipment cleanup area for LANL is located at TA-50-1. The location of TA-50-1 is shown on a map in the LANL General Part A (LANL, 1998b).

Contour lines on the topographic map are in intervals sufficient to detail natural drainage at LANL and in the vicinity of the waste management units at TA-50. As provided in 20.4.1 NMAC, Subpart IX, 270.14(b)(19) [6-14-00], LANL has submitted the maps to the New Mexico Environment Department at these scales and contour intervals due to the size of the waste management units, the extent of the LANL facility, and the topographic relief in the area.

A.5 GROUNDWATER MONITORING [20.4.1 NMAC, Subpart IX, 270.14(c) and 20.4.1 NMAC, Subpart V, 264.90(a)]

Groundwater monitoring and protection requirements specified in 20.4.1 NMAC, Subpart IX, 270.14(c) and 20.4.1 NMAC, Subpart V, 264.90(a) [6-14-00], apply only to owners and operators of surface impoundments, waste piles, land treatment units, and landfills. This document addresses CSUs, which are not regulated units subject to 20.4.1 NMAC, Subpart IX, 270.14(c) [6-14-00].

A.6 OTHER PERMIT ACTIVITIES

Other types of Resource Conservation and Recovery Act permits include, but are not limited to, the following:

- Permits by Rule
- Emergency Permits
- Hazardous Waste Incinerator Permits
- Permits for Land Treatment Demonstrations Using Field Test of Laboratory Analyses

- Interim Permits for Underground Injection Control Program Wells
- Research, Development, and Demonstration Permits
- Permits for Boilers and Industrial Furnaces Burning Hazardous Waste

Currently, none of these permit types are relevant for operations at TA-50.

A.7 REFERENCES

LANL, 2001, "Response to Request for Supplemental Information; Technical Adequacy Review, RCRA Permit Application; General Part A, April 1998, Revision 0.0; General Part B, October 1998, Revision 1.0, Los Alamos National Laboratory, EPA ID No. NM0890010515," Los Alamos National Laboratory, Los Alamos, New Mexico.

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LANL, 1992, "Environmental Surveillance at Los Alamos During 1990," Los Alamos National Laboratory, Los Alamos, New Mexico.

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Woodward-Clyde Federal Services, 1995, "Seismic Hazards Evaluation of the Los Alamos National Laboratory," Los Alamos, New Mexico.